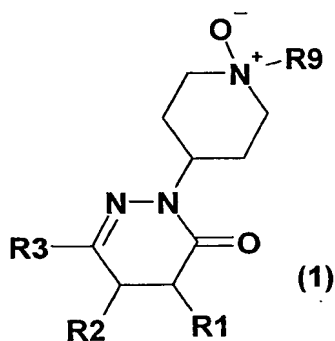


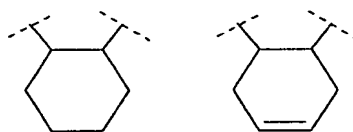
**Patent claims**

1. Compounds of formula 1,

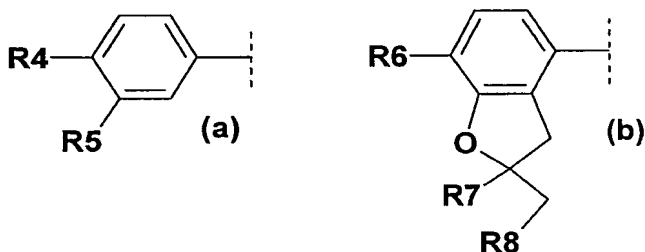


in which

R1 and R2 represent independently from one another hydrogen or 1-4C-alkyl, or R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formulae (a) or (b)



wherein

R4 is 1-4C-alkoxy or 1-4C-alkoxy which is completely or predominantly substituted by fluorine,  
 R5 is 1-8C-alkoxy, 3-7C-cycloalkoxy, 3-7C-cycloalkylmethoxy, or 1-4C-alkoxy which is completely or predominantly substituted by fluorine,  
 R6 is 1-4C-alkoxy, 3-5C-cycloalkoxy, 3-5C-cycloalkylmethoxy, or 1-4C-alkoxy which is completely or predominantly substituted by fluorine,  
 R7 is 1-4C-alkyl and  
 R8 is hydrogen or 1-4C-alkyl,  
 or wherein

R7 and R8 together and with inclusion of the two carbon atoms, to which they are bonded, form a spiro-linked 5-, 6- or 7-membered hydrocarbon ring, optionally interrupted by an oxygen or sulphur atom,

R9 is  $-(CH_2)_m-S(O)_2-R_{10}$ ,  $-(CH_2)_n-C(O)-R_{11}$  or  $-(CH_2)_p-Z-(CH_2)_q-R_{14}$ ,

R10 is  $-N(R_{12})R_{13}$ ,

R11 is  $-N(R_{12})R_{13}$ ,

R12 and R13 are independent from each other hydrogen, 1-7C-alkyl, 3-7C-cycloalkyl, 3-7C-cycloalkyl-methyl, or R12 and R13 together and with inclusion of the nitrogen atom to which they are bonded, form a 4-morpholinyl-, 1-pyrrolidinyl-, 1-piperidinyl- or a 1-hexahydroazepinylring,

Z represents a bond,  $-O-$ ,  $-C(O)-$ ,  $-C(O)-N(H)-$ ,  $-N(H)-C(O)-$  or  $-S(O)_2-$ ,

R14 is hydrogen, hydroxyl, 1-4C-alkoxy, hydroxy-2-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy, 1-4C-alkoxy-carbonyl, aminocarbonyl, mono- or di-1-4C-alkylaminocarbonyl, 1-4C-alkylcarbonyl or 1-4C-alkyl-carbonylamino,

m is an integer from 1 to 4,

n is an integer from 1 to 4,

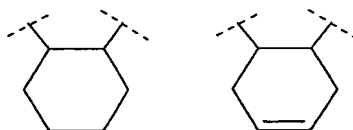
p is an integer from 1 to 4,

q is an integer from 1 to 4,

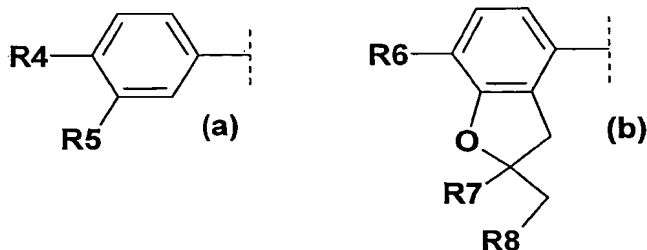
and the salts of these compounds.

2. Compounds of formula 1 according to claim 1, in which

R1 and R2 represent independently from one another hydrogen or 1-4C-alkyl, or R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formulae (a) or (b)



wherein

R4 is 1-4C-alkoxy or 1-2C-alkoxy which is completely or predominantly substituted by fluorine,

R5 is 1-4C-alkoxy,

R6 is 1-2C-alkoxy or 1-2C-alkoxy which is completely or predominantly substituted by fluorine,

R7 is methyl and

R8 is hydrogen,

or wherein

R7 and R8 together and with inclusion of the two carbon atoms, to which they are bonded, form a spiro-linked cyclopentane, cyclohexane, tetrahydrofurane or tetrahydropyran ring,

R9 is  $-(CH_2)_m-S(O)_2-R_{10}$ ,  $-(CH_2)_n-C(O)-R_{11}$  or  $-(CH_2)_p-Z-(CH_2)_q-R_{14}$ ,

R10 is  $-N(R_{12})R_{13}$ ,

R11 is  $-N(R_{12})R_{13}$ ,

R12 and R13 are independent from each other hydrogen or 1-4C-alkyl, or R12 and R13 together and with inclusion of the nitrogen atom to which they are bonded, form a 4-morpholinyl-, 1-pyrrolidinyl-, 1-piperidinyl- or a 1-hexahydroazepinylring,

Z represents a bond,  $-O-$  or  $-S(O)_2-$ ,

R14 is hydrogen, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy, 1-4C-alkoxycarbonyl, aminocarbonyl, mono- or di-1-4C-alkylaminocarbonyl or 1-4C-alkylcarbonylamino,

n is 1 or 2,

m is 1 or 2,

p is 1, 2 or 3,

q is 1 or 2,

and the salts of these compounds.

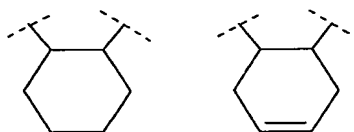
3. Compounds of formula 1 according to claim 1, in which either

R1 is hydrogen and

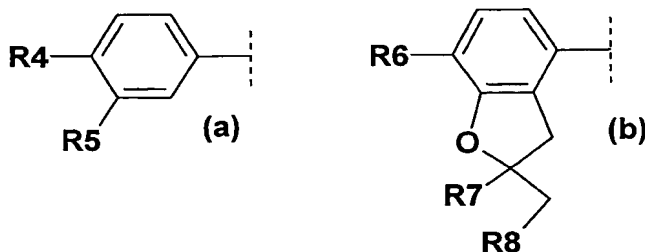
R2 is hydrogen,

or

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formulae (a) or (b)



wherein

R4 is 1-4C-alkoxy,

R5 is 1-4C-alkoxy,

R6 is 1-2C-alkoxy,

R7 is methyl and

R8 is hydrogen,

R9 is  $-(CH_2)_m-S(O)_2-R_{10}$ ,  $-(CH_2)_n-C(O)-R_{11}$  or  $-(CH_2)_p-Z-(CH_2)_q-R_{14}$ ,

R10 is  $-N(R_{12})R_{13}$ ,

R11 is  $-N(R_{12})R_{13}$ ,

R12 and R13 are independent from each other hydrogen or 1-4C-alkyl, or R12 and R13 together and with inclusion of the nitrogen atom to which they are bonded, form a 4-morpholinyl-, 1-pyrrolidinyl-, 1-piperidinyl- or a 1-hexahydroazepinylring,

Z represents  $-O-$  or  $-S(O)_2-$ ,

R14 is hydrogen, 1-4C-alkoxy or 1-4C-alkoxy-1-4C-alkoxy,

n is 1 or 2,

m is 1 or 2,

p is 1, 2 or 3,

q is 1 or 2,

and the salts of these compounds.

4. Compounds of formula 1 according to claim 1, in which either

R1 is hydrogen and

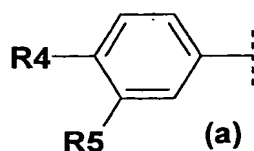
R2 is hydrogen,

or

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formula (a)



wherein

R4 is methoxy,

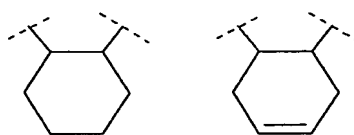
R5 is methoxy,

R9 is dimethylaminocarbonylmethyl, aminocarbonylmethyl, piperidin-1-ylcarbonylmethyl or morpholino-4-ylcarbonylmethyl,

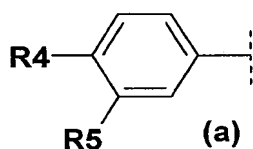
and the salts of these compounds.

5. Compounds of formula 1 according to claim 1, in which

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formula (a)



wherein

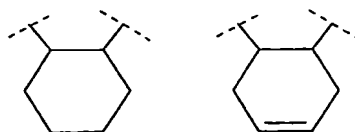
R4 is methoxy,

R5 is methoxy,

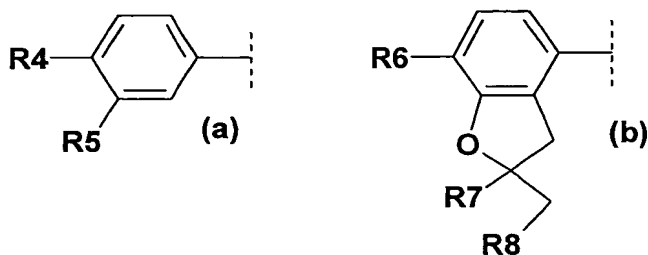
R9 is aminocarbonylmethyl or isopropylaminocarbonylmethyl,  
and the salts of these compounds.

6. Compounds of formula 1 according to claim 1, in which

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formulae (a) or (b)



wherein

R4 is 1-4C-alkoxy or 1-4C-alkoxy which is completely or predominantly substituted by fluorine,  
 R5 is 1-8C-alkoxy, 3-7C-cycloalkoxy, 3-7C-cycloalkylmethoxy, or 1-4C-alkoxy which is completely or predominantly substituted by fluorine,

R6 is 1-4C-alkoxy, 3-5C-cycloalkoxy, 3-5C-cycloalkylmethoxy, or 1-4C-alkoxy which is completely or predominantly substituted by fluorine,

R7 is 1-4C-alkyl and

R8 is hydrogen or 1-4C-alkyl,

or wherein

R7 and R8 together and with inclusion of the two carbon atoms, to which they are bonded, form a spiro-linked 5-, 6- or 7-membered hydrocarbon ring, optionally interrupted by an oxygen or sulphur atom,

R9 is  $-(CH_2)_n-C(O)-R11$ ,

R11 is  $-N(R12)R13$ ,

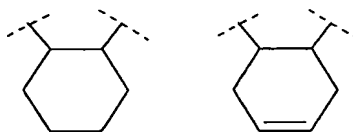
R12 and R13 are independent from each other hydrogen, 1-7C-alkyl, 3-7C-cycloalkyl, 3-7C-cycloalkylmethyl, or R12 and R13 together and with inclusion of the nitrogen atom to which they are bonded, form a 4-morpholinyl-, 1-pyrrolidinyl-, 1-piperidinyl- or a 1-hexahydroazepinylring,

n is an integer from 1 to 4,

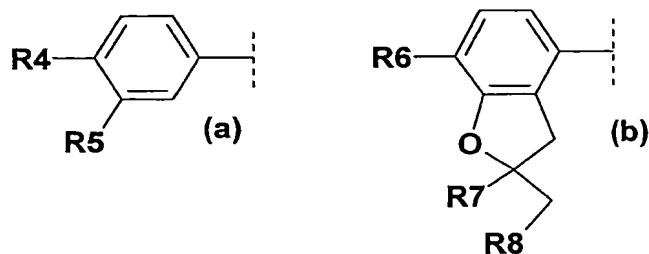
and the salts of these compounds.

7. Compounds of formula 1 according to claim 1, in which

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formulae (a) or (b)



wherein

R4 is 1-4C-alkoxy or 1-2C-alkoxy which is completely or predominantly substituted by fluorine,

R5 is 1-4C-alkoxy,

R6 is 1-2C-alkoxy or 1-2C-alkoxy which is completely or predominantly substituted by fluorine,

R7 is methyl and

R8 is hydrogen,

or wherein

R7 and R8 together and with inclusion of the two carbon atoms, to which they are bonded, form a spiro-linked cyclopentane, cyclohexane, tetrahydrofurane or tetrahydropyran ring,

R9 is  $-(CH_2)_n-C(O)-R11$ ,

R11 is  $-N(R12)R13$ ,

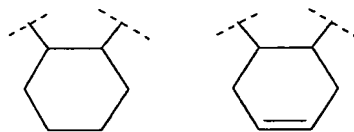
R12 and R13 are independent from each other hydrogen or 1-4C-alkyl, or R12 and R13 together and with inclusion of the nitrogen atom to which they are bonded, form a 4-morpholinyl-, 1-pyrrolidinyl-, 1-piperidinyl- or a 1-hexahydroazepinylring,

n is 1 or 2,

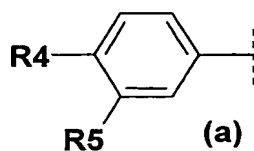
and the salts of these compounds.

8. Compounds of formula 1 according to claim 1, in which

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formula (a)



wherein

R4 is 1-4C-alkoxy,

R5 is 1-4C-alkoxy,

R9 is  $-(CH_2)_n-C(O)-R_{11}$ ,

R11 is  $-N(R_{12})R_{13}$ ,

R12 is hydrogen and

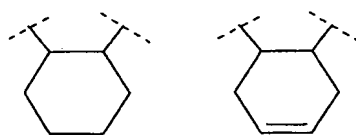
R13 is hydrogen or 1-4C-alkyl,

n is 1 or 2,

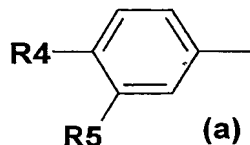
and the salts of these compounds.

9. Compounds of formula 1 according to claim 1, in which

R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from



R3 represents a phenyl derivative of formula (a)



wherein

R4 is methoxy,

R5 is methoxy,

R9 is  $-(CH_2)_n-C(O)-R_{11}$ ,

R11 is  $-N(R_{12})R_{13}$ ,

R12 is hydrogen and

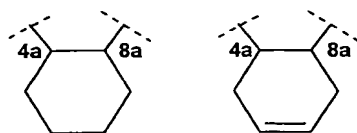
R13 is hydrogen or isopropyl,

m is 1,

and the salts of these compounds.

10. Compounds of formula 1 according to one of the claims 1 to 9 in which R1 and R2 together and with inclusion of the two carbon atoms, to which they are bonded, form a group selected from





and in which the hydrogen atoms in the positions 4a and 8a are cis-configured.

11. Compounds of formula 1 according to claim 10 in which the absolute configuration (according to the rules of Cahn, Ingold and Prelog) is S in the position 4a and R in the position 8a.
12. Compounds of formula 1 according to one of the claims 1 to 4 and 6 to 7 in which R<sub>3</sub> represents a phenyl derivative of formula (a).
13. Compounds of formula 1 according to claim 1 for the treatment of diseases.
14. Pharmaceutical compositions containing one or more compounds of formula 1 according to claim 1 together with the usual pharmaceutical auxiliaries and/or carrier materials.
15. Use of compounds of the formula 1 according to claim 1 for the preparation of pharmaceutical compositions for the treatment of airway disorders.
16. A method for treating an illness treatable by the administration of a PDE4 inhibitor in a patient comprising administering to said patient in need thereof a therapeutically effective amount of a compound of formula 1 as claimed in claim 1.
17. A method for treating airway disorders in a patient comprising administering to said patient a therapeutically effective amount of a compound of formula 1 as claimed in claim 1.